

AMENDMENTS TO THE CLAIMS

1. (currently amended) A storage apparatus operable as primary in a remote copy pair comprising:

a remote copy component operable to establish a remote copy relationship between said primary, storing a primary copy, and a secondary, storing a secondary copy;

a copy component operable at said primary to create a tertiary copy for download onto a portable physical storage medium for offline transport to said secondary for upload;

a synchronization component for synchronizing data at said secondary with data at said primary using an online link in response to a request for synchronization from said secondary;

a metadata component operable to store a dirty state indicator of a portion of a storage space at said primary after establishment of said remote copy relationship at said primary; and

said metadata component being operable to limit synchronization of said secondary copy when uploading said tertiary copy from said portable physical storage medium at said secondary to said portion of storage having said dirty state indicator at said primary.

2. (original) A storage apparatus as claimed in claim 1, wherein said metadata component comprises a bitmap and said portion of said storage space is a grain of data.

3. (currently amended) A storage apparatus as claimed in claim 1, further operable as a secondary in a remote copy pair and comprising:

a loading component for uploading said tertiary copy from said portable physical storage medium;

a suppressing component for suppressing synchronization from a metadata component in said secondary; and

a requester component for requesting synchronization of data at said secondary with data at said primary using an online link.

4. (original) A storage apparatus as claimed in claim 1, wherein said online link comprises a storage area network.

5. (original) A storage apparatus as claimed in claim 1, wherein said copy component comprises a Flash Copy component.
6. (original) A storage adapter card comprising a storage apparatus as claimed in claim 1.
7. (original) A storage virtualization engine comprising a storage adapter card as claimed in claim 6.
8. (currently amended) A method of operating a storage apparatus as primary in a remote copy pair comprising the steps of:
- establishing a remote copy relationship between said primary, storing a primary copy, and a secondary, storing a secondary copy;
 - creating a tertiary copy of a storage space for download onto a portable physical storage medium for offline transport to said secondary for upload;
 - synchronizing data at said secondary with data at said primary using an online link in response to a request for synchronization from said secondary;
 - storing, in a metadata component, a dirty state indicator of a portion of a storage space at said primary after establishment of said remote copy relationship at said primary; and
 - said metadata component being operable to limit synchronization of said secondary copy when uploading said tertiary copy from said portable physical storage medium at said secondary to said portion of storage having said dirty state indicator at said primary.
9. (original) A method as claimed in claim 8, wherein said metadata component comprises a bitmap and said portion of said storage space is a grain of data.
10. (currently amended) A method as claimed in claim 8, wherein said storage apparatus is further operable as a secondary in a remote copy pair and comprising steps of:
- uploading said tertiary copy from said portable physical storage medium;
 - suppressing synchronization from a metadata component in said secondary; and
 - requesting synchronization of data at said secondary with data at said primary using an online link.

11. (original) A method as claimed in claim 8, wherein said online link comprises a storage area network.

12. (currently amended) A method as claimed in claim 8, wherein said step of creating a tertiary copy of a storage space comprises using a Flash Copy component.

13. (currently amended) A computer program product comprising computer program code tangibly embodied in a computer-readable storage medium to, when loaded into a computer system and executed thereon, cause said computer system to operate a storage apparatus as primary in a remote copy pair by performing the computer program code steps of:

establishing a remote copy relationship between said primary, storing a primary copy and a secondary, storing a secondary copy;

creating a tertiary copy of a storage space for download onto a portable physical storage medium for offline transport to said secondary for upload;

synchronizing data at said secondary with data at said primary using an online link in response to a request for synchronization from said secondary;

storing, in a metadata component, a dirty state indicator of a portion of a storage space at said primary after establishment of said remote copy relationship at said primary; and

limiting, by said metadata component, synchronization of said secondary copy when uploading said tertiary copy from said portable physical storage medium at said secondary to said portion of storage having said dirty state indicator at said primary.

14. (original) A computer program product as claimed in claim 13, wherein said metadata component comprises a bitmap and said portion of said storage space is a grain of data.

15. (currently amended) A computer program product as claimed in claim 13, wherein said storage apparatus is further operable as a secondary in a remote copy pair and comprising further computer program code steps of:

uploading said flash tertiary copy from said portable physical storage medium;

suppressing synchronization from a metadata component in said secondary; and

requesting synchronization of data at said secondary with data at said primary using an online link.

16. (original) A computer program product as claimed in claim 13, wherein said online link comprises a storage area network.

17. (currently amended) A computer program product as claimed in claim 13, wherein said computer program code step of creating a tertiary copy of a storage space comprises using a Flash Copy component.

18. (currently amended) A method of deploying a computerized business continuity service by operating a customer storage apparatus as primary in a remote copy pair comprising the steps of:

establishing a remote copy relationship between said primary, storing a primary copy and a secondary, storing a secondary copy;

creating a tertiary copy of a storage space for download onto a portable physical storage medium for offline transport to said secondary for upload;

synchronizing data at said secondary with data at said primary using an online link in response to a request for synchronization from said secondary;

storing, in a metadata component, a dirty state indicator of a portion of a storage space at said primary after establishment of said remote copy relationship at said primary; and

said metadata component being operable to limit synchronization of said secondary copy when uploading said tertiary copy from said portable physical storage medium at said secondary to said portion of storage having said dirty state indicator at said primary.

19. (original) A method as claimed in claim 18, wherein said metadata component comprises a bitmap and said portion of said storage space is a grain of data.

20. (currently amended) A method of deploying a computerized business continuity service as claimed in claim 18, wherein a supplier storage apparatus is operable as a secondary in a remote copy pair and comprising steps of:

uploading said tertiary copy from said portable physical storage medium;

suppressing synchronization from a metadata component in said secondary; and

requesting synchronization of data at said secondary with data at said primary using an online link.

21. (original) A method of deploying a computerized business continuity service as claimed in claim 18, wherein said online link comprises a storage area network.

22. (currently amended) A method of deploying a computerized business continuity service as claimed in claim 18, wherein said step of creating a tertiary copy of a storage space comprises using a Flash Copy component.